OIL FOR THE TANKS OF RUSSIA

By A. RIVA

In all reports from the Soviet battle front, tanks, planes, and motorized equipment play the dominant role. Even though some shoeleather may be saved in this war, the demand for oil certainly surpasses anything ever known in previous wars. For the armies on the Soviet front, oil is as essential as food or ammunition.

What is the oil situation of the Red Army? Obviously the actual figures are being kept secret. However, enough is known to reach some conclusions.

The author of this article is a retired Italian army officer living as a journalist in Peking.—K.M.

HOW MUCH OIL DOES THE USSR PRODUCE?

THE latest figures available on the crude-oil production of the USSR are as follows:

	In Million Tons
1937	30.5
1938	32.2
1939	30.5
1940	34.2

Although, on careful examination, these figures appear to be exaggerated, we must base our calculations on them as no others can be obtained.

Figures on oil production since the outbreak of the war on June 22, 1941, are, of course, not available. However, we can be certain that everything was done to increase it as much as possible and in particular to develop the relatively new oil fields of the "Second Baku." Considering the well-known shortage in the Soviet manufacture of high-grade equipment for oil drilling and refining and the disturbances due to the outbreak of the war with Germany, yet allowing the Soviets the benefit of the doubt, we may assume that their output in 1941 was at most 37 million tons and during the first six months of 1942, prior to the great summer offensive, a maximum of 19 million tons.

Whatever oil the USSR has produced since the summer of 1941 has remained within her borders. Even before the war, her exports had almost ceased. They fell from 6 million tons in 1932 to about 1.5 million tons in 1938, in spite of the existing demand abroad. This was in part due to the establishment of reserves for war, but is mainly the consequence of the widespread use of oil as fuel in industry and agriculture. According to Soviet press reports, 60 per cent of the 1940 production of motor fuel was consumed by tractors, nearly 500,000 of them operating on the industrialized farms of the USSR. We may note, incidentally, that kerosene is the standard cooking fuel of the population.

CAUCASUS

The main oil fields of the USSR may be grouped comprehensively under three names: Caucasus, Emba, and Ural-Volga.

Up to and including 1940, the Caucasus, with its three main fields of Baku, Grozny, and Maikop, supplied 87 per cent of the total crude-oil production of the USSR,

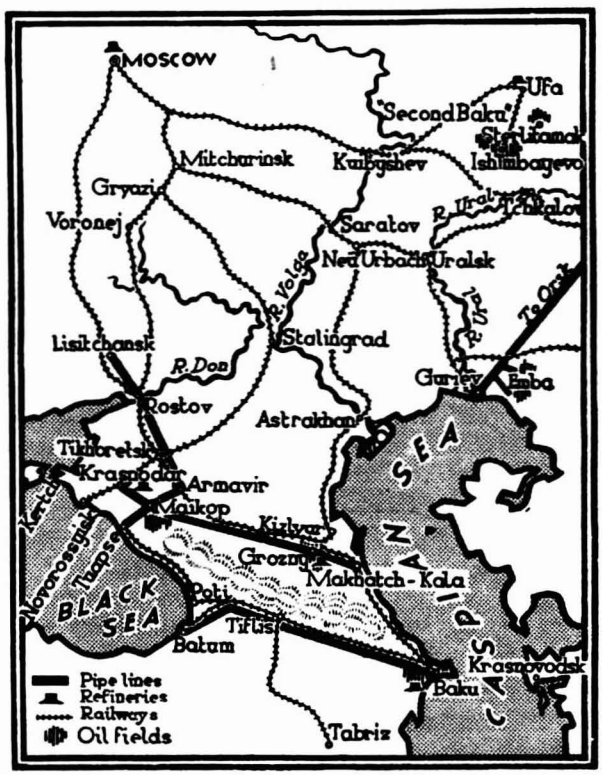
which would bring the production of Caucasian oil in 1940 up to about 29,700,000 tons. In 1941 and 1942, of course, all emphasis was put on the development of fields other than the Caucasian, partly because of the danger of losing the latter, partly because there were no means of transporting any more oil from Baku through the bottleneck of the transportation system. The various fields of the Caucasus produced as follows :

CAUCASUS OIL PRODUCTION 1940

Maikop	8 per cent
Grozny	23 „ „
Baku	69 „ „
Total Caucasus ..	100 per cent

Both Maikop and Grozny are part of the North Caucasus pipeline system shown on our map. The main line runs from the Caspian port of Makhatch Kala via Grozny and Maikop to Tuapse on the Black Sea. It has an annual capacity of 1.7 million tons.

The most important branch line leads from Maikop via Armavir and Rostov right into the Donbass (Donets-Basin), the industrial heart of the USSR, and ends at Lisitchansk. Its capacity is also 1.7 million tons. A smaller branch carries crude oil from Maikop to the refineries of Krasnodar.



Baku, on the Apsheron peninsula of the Caspian Sea, one of the richest oil fields in the world, is connected with Batum on the Black Sea by two pipe lines, with an annual capacity of 1.7 and 1 million tons respectively, one carrying crude oil, the other oil refined in the Baku plant. These lines run in the deep valley between the Caucasus proper and the Transcaucasus range. Another line connecting Baku with the Grozny system was under construction in 1939 and may be functioning by now.

By rail, Baku is linked both through Rostov and Stalingrad with the main Russian trunk system and, via Tiflis, with Batum and Poti on the Black Sea on the one hand and with Tabriz on the other. According to recent reports, the tracks have been extended from Tabriz to Teheran. Work on a line of more than 200 miles from Astrakhan to Kizlyar and on to the Makhatch Kala/Grozny line was reported in 1941, but nothing is known about the progress of this work.

More important than the railroads are the shipping connections of the Caucasus fields. They are linked by them across the Caspian with Krasnovodsk (railhead of the Central Asia railways), with Guryev (the Caspian terminus of the pipe-line system of the Emba area and of the Ural railways) and, via Astrakhan, with the inland waterways system of the Volga, which allows the movement of river barges clear across Russia to Leningrad and the White Sea.

EMBA

Among the three great oil areas of the USSR, the Emba fields have the smallest

production, about 1.3 million tons annually, and are located in the thinly populated, desert-like Kirghiz steppes. But the pipe-line system of this area is impressive. The main line runs straight from Guryev on the Caspian to Orsk and by now perhaps even across the Ural mountains to Magnitogorsk. It carries to the industrial areas of the Ural the output of the Emba area—to which it is connected by over 150 miles of feeder lines—as well as the Caucasus oil brought to Guryev by tankers. It was ready in 1938, when the capacity was given as 2 million tons a year. A plan to increase the capacity of the line to handle 5 million tons a year was mentioned. Regarding the success of these plans, however, we are in the dark.

URAL-VOLGA

This area comprises the oil fields of the Bashkir and Tartar Republics, which are also known comprehensively as the "Second Baku," and the most important of which are at Ishimbayavo, south of Ufa. According to the Third Five Year Plan, the annual yield of the "Second Baku" was supposed by 1942 to reach 21.8 per cent of the total Soviet production. It is very unlikely that this has been accomplished, as the last figure available, that for 1941, gave a production of only 1.6 million tons, a decline from the almost 2 million tons which had been produced there in 1939.

In view of the extraordinary efforts which since then have doubtless been put into the "Second Baku" as the only reasonably safe oil field of European Russia, we will assume its production for 1941 to have been 5.3 million tons.

1941 AND THE WAR

Considering the progress actually achieved in the former Five Year Plans, when technical assistance and equipment were obtained in large quantities from abroad, and when the country's industrial organization had not been crippled by the loss of important industrial areas as it has in the past year, and taking into account that all increase in the output of oil was probably achieved in other than Caucasian fields, we obtain the following picture:

PROBABLE 1941 OIL PRODUCTION OF THE USSR
(in million tons)

Baku	20.7	
Grozny	6.5	
Maikop	2.5	
Caucasus	29.7	29.7
Emba		1.3
"Second Baku"		5.3
Other areas, such as Sakhalin, etc.		0.7
USSR Total		37.0

What has been the effect of the war on the oil situation of the USSR? Up to now, the war has had no direct influence on the output or delivery of oil from Emba and the "Second Baku." The Emba/Orsk pipe line is probably still functioning, as are the railways from Orsk and Ufa to Moscow, although they must be terribly overloaded as both lines meet in Kuibyshev. But the Caucasus oil situation has been gravely affected.

First a word about the pipe lines. Last year, many refineries in the Donbass and the Ukraine had already fallen to the Axis armies, whose progress along the coasts of the Black Sea and Sea of Azov and whose occupation of almost the entire Crimean peninsula had also brought to a standstill the flow to the eastern front of oil brought across the sea from Batum, Tuapse, or Novorossyisk. This year's operations by land, sea, and air have continued the process, with the result that the usefulness of the Black Sea harbors as outlets of Caucasus oil to the Red forces—except the Red Navy—may be said to have ceased. Thus the 2.7 million tons of pipe-line capacity between Baku and Batum have been practically obliterated as a military factor.

The Maikop fields are already in German hands. Those of Grozny are threatened and probably by now in a state of being dismantled in anticipation of their inevitable loss. The entire pipe-line and railway system from the Caucasus to Russia, with the exception of the line Kizlyar/Astrakhan, is gone.

THE RAILWAYS

According to recent British reports, the railway system of the USSR possesses

500,000 tons of tank-car capacity. Counting a minimum of three weeks for a round trip and allowing no time for repair, these cars could transport 8 million tons a year. Although no figures are available as to the distribution and operation of this rolling stock, the following considerations naturally come to mind. The traffic density of the railways of the USSR, even before the present war, was the highest in the world. In 1940, Soviet railways hauled 4.3 million tons of freight per kilometer of track, as against 0.94 million tons for the United States. While the capacity of the rolling stock at that date was three times that of 1913, the load carried was five times as great.

Except, perhaps, for some of the timber, all the freight hauled was indispensable—that is to say, it could not be reduced without a corresponding letdown at some point of the country's economic structure. This, then, was also the situation of the railways connecting the Caucasus with the Russian trunk system when, as a result of the advance of the European armies, they came within the immediate line of communication area of the Soviet battle front. Thenceforth, these already overstrained railways had not only to provide for the movement of whole armies and their supplies but also to bear the brunt of direct and devastating attacks of the Luftwaffe. Considering the length of time this situation has lasted, it seems safe to conclude that the average daily load of oil carried northward by these railways has fallen well below the prewar figure. And as for the period since the beginning of the European summer offensive of 1942, all direct rail connections between the Caucasus and the rest of the USSR, with the sole exception of the Kizlyar / Astrakhan / Neu Urbach / Saratov line, have been cut.

THE CRUX OF THE MATTER

Hence the crux of the matter lies with shipping. A very substantial load of oil supplies from the Caucasus for domestic consumption has been carried by the river tanker fleet, with an estimated capacity of 600,000 tons, operating on the Caspian Sea and the Volga water system. The network of rivers and connecting canals enabled this fleet to distribute the oil over a large section of European Russia, but winter restricts the activity of river tankers to little more than half a year. Counting an average of six weeks for the round trip and a navigation period of seven months, they probably carried around 5 to 6 million tons annually. The fact that, like all other transportation in the USSR, the tanker fleet has always operated at full capacity, and that the particularly severe winter of 1941/42 lasted longer than usual, does not suggest the probability that the quantity of oil carried by this means in the past fifteen months can have been greater than usual, notwithstanding the fact that the transport itself up to the end of July has been immune from direct attacks.

The German approach toward Stalingrad gravely endangers the usefulness of Russia's most important waterway, the Volga, as a carrier of Caucasus oil. Once in Stalingrad or at any other point along the river, the Germans could completely stop the Volga-borne supply of Caucasus oil to the central and northern parts of the USSR. This would leave only the railways Kizlyar/Astrakhan/Neu Urbach and Guryev/Uralsk and the waterway of the Ural River, which latter is very unsatisfactory as it is not linked with the main system of Soviet waterways and requires further transport again by the overworked railway system. Incidentally, even in time of peace the Volga is closed by ice many months every year; in its middle course, navigation is only possible for an average of 150 days a year.

REASONS FOR DOUBT

Having considered the various means of transportation available for Soviet oil, we can give the reasons for our skepticism with regard to Soviet statistics. According to Soviet figures, the total oil production in 1940 was 34.2 million tons. The Caucasus with its 87-per-cent quota

would thus have produced 29.7, or roughly 30 million tons. What means were available for the transportation of this amount to the industrial centers of the USSR? Taking all available Soviet data into account, we obtain approximately the following picture:

TRANSPORTATION OF CAUCASIAN OIL IN 1940
(in million tons)

By pipe line to Batum and Tuapse and on by boat across the Black Sea	4.4
By pipe line Armavir/Donbass	1.7
By rail via Rostov, Stalingrad, or Astrakhan	6.0
By tanker from Baku or Makhatch Kala across the Caspian Sea to the Volga water system	5.5
By tanker from Baku or Makhatch Kala to Guryev and on by pipe line, rail, or boat	0.9
By tanker from Baku across the Caspian Sea to Krasnovodsk and on by rail to Central Asia	0.5
Miscellaneous	1.0
Total	20.0

Checking these figures, it appears impossible that more than 20 million tons could have been transported, while 30 million were supposedly produced. Even if we take into consideration the loss in bulk by refining as well as the local needs of oil in the Caucasus itself, it seems absurd to assume that millions of tons more were produced than could be shipped. Having more confidence in the transportation figures than in the production figures, nothing is left but to assume that the figures for the oil production of the USSR are considerably padded.

CONCLUSIONS

We arrive at the following conclusions:

(1) The output of the Caucasus is still by far the preponderant factor in the oil production of the USSR.

(2) On account of the transport situation of the area, the quantity of Caucasus oil which has reached its destination in the USSR in the past fifteen months is likely to have decreased in a substantial measure. Thus, although the occupation of large territories of the USSR by the Axis armies has released the quantity of oil formerly required by these territories, the corresponding improvement in the oil situation of the USSR must be reckoned potential rather than actual, because the available excess cannot be brought to those places where it is needed.

(3) The huge quantity of oil required by the highly mechanized Soviet military machine has been drawn increasingly from reserves beyond the bottleneck of the Caucasus transport system, as also from supplies earmarked for the needs of industrial production or the people's livelihood. Robbing any of these must lead to eventual exhaustion of the physical power to resist.

(4) The course of the fronts at the present time has reduced the once mighty flood of oil reaching European Russia from the Caucasus to a modest trickle flowing over the following routes:

Volga River (although under the hail of German bombers)
Astrakhan/Neu Urbach railway
Guryev/Uralsk railway

(5) If we assume that in 1940 some 31 million tons of oil were available to the European part of the USSR, the annual amount of oil actually reaching it on the basis of the present front line, has probably dwindled down to the following:

	In Tons
From the "Second Baku"	5,000,000
From the Emba fields	1,000,000
From the Caucasus	3,500,000
New oil production available in the European USSR annually	9,500,000

(6) Some of the most important refineries of the USSR are already under German control (Odessa, Kherson, Berdyansk, Lisitchansk, Krasnodar); others (Stalingrad, Grozny) are threatened and probably not in use.

As no substantial help can be expected from Moscow's foreign allies in view of their own tanker situation, and as a large part of the oil reserves was probably used up in the past fifteen months of war, the lack of oil will prove one of the most dangerous shackles of the Red Army.